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Document 2-1

<tentative translation>

Quantification and Analysis of Piracy Sites on the Internet in Japan (July 2019 to July 2022)



Photonic System Solutions Inc.

Accredited by University of Electro-Communications

Commissioned by **Motion Picture Association, Inc. (MPA)**, conducted by Photonic System Solutions Inc., and supervised by Eriko Watanabe (The University of Electro-Communications)



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Presentation outline

1. Overview of 2022 piracy site survey
2. Characteristics of piracy sites in the 2022 survey
3. Survey results for number of visits to piracy sites
4. Comparison with number of visits to legitimate sites
5. Trends in total visits to piracy sites over 5 years
6. Summary

Overview of FY2022 piracy site survey

- **Survey conduct period:** July 1, 2022 - September 30, 2022
- **Survey target period:** July 2019 - July 2022 (3 years)
- **Survey target contents:** Film, TV program, Anime, Manga
- **Survey target site type: 5 types**
Host sites, P2P sites, Leech sites, Streaming sites, Online reading sites

Survey procedure/method

- (1) Listing and extracting piracy sites:
Extracted through the 7 methods shown in the next slide, including visual inspection and FReCs®List
- (2) Narrowing down piracy sites: Determining which piracy sites to target in the survey
- (3) Collection of basic data on piracy sites (directly checked)
Site name, URL, site type, main type of content, site status
Server information: Obtaining Netblock Owner (NetCraft)

Netblock Owner: Company that manages IP addresses associated with domains
- (4) Collection of data on the number of visits to piracy sites
(SimilarWeb [after mobile algorithm update at the end of August 2022])
 - ① Monthly total visits (July 2019 to July 2022)
 - ② Monthly number of visits by device (July 2019 to July 2022)

Quantitative analysis of trends concerning piracy sites was performed based on the above information.

Piracy sites targeted in the 2022 survey

- ① 3,695 piracy sites accessible from Japan were extracted through 7 methods.
- ② 1st: Excluded specific sites; 2nd: Determined number of sites with over 100,000 visits monthly.

FY2022: 1,090 sites (an increase of 223 sites from the previous year)

FY2020: 731 sites surveyed; FY2021: 867 sites surveyed

Initial list created based on the following information

1. PSS database
2. Past survey report data
3. Lumen database
4. Transparency report
5. Summary websites' lists
6. SimilarWeb
7. Searches via Google, etc.

3,695 sites

867 (FY2021) + 223 sites

1,090 sites

1st step

2nd step

Exclude the following sites

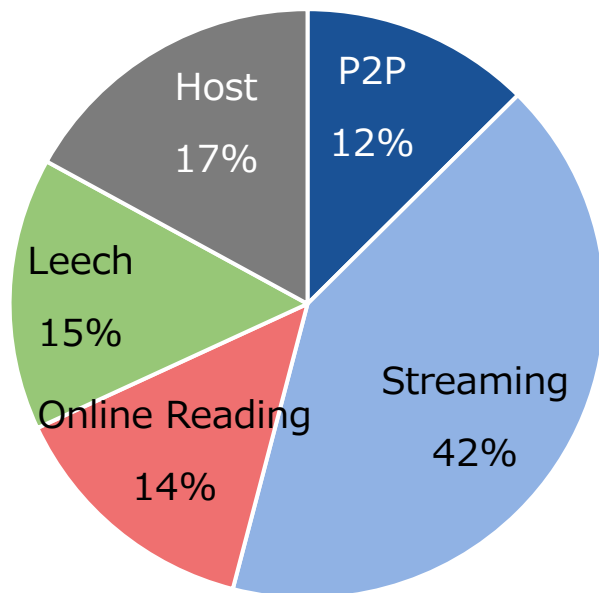
- Porn sites, music/game sites
- Sites not in copyright infringement
- Sites that cannot be investigated due to unknown URL, etc.

- Extract those sites with over 100,000 visits monthly during the survey period
- Exclude sites that are no longer piracy sites

Characteristics of piracy sites in the 2022

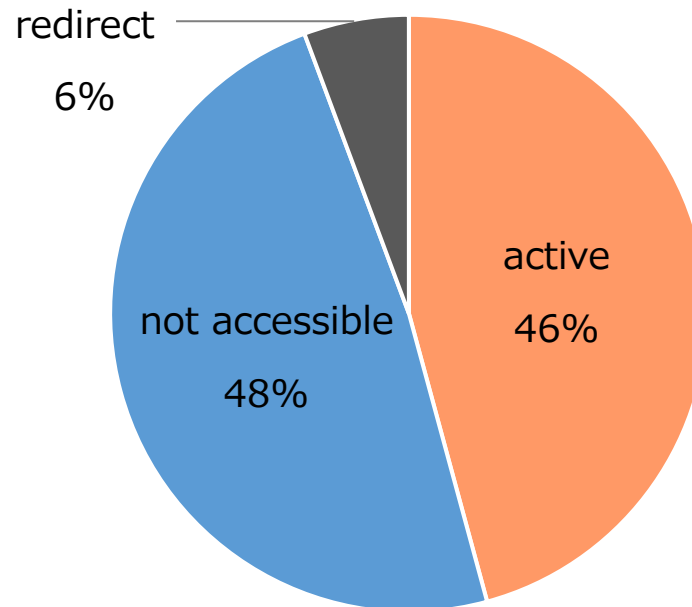
survey: Site type/active status

Classification of piracy site types (2022)



Total: 1,090 sites

Current status of piracy sites (2022)



Total: 1,090 sites

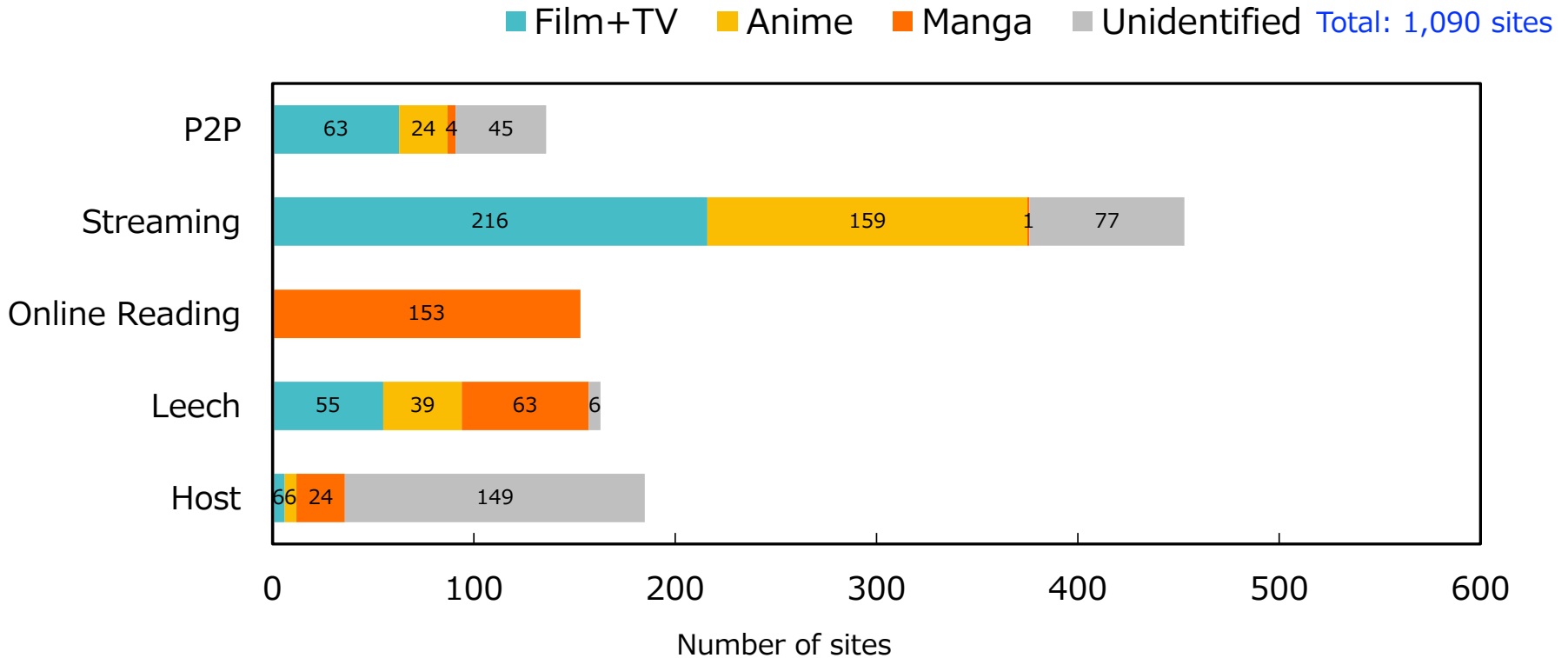
- Of the 1090 sites, streaming sites accounted for the largest share, followed by host sites, leech sites, P2P sites, and online reading sites.
- Of the 1090 sites, 46% were active, 48% were closed or inaccessible due to an error at the time of the survey, and 6% redirected to an unrelated site or other domain. The ratio of inaccessible sites increased by 5%, suggesting the possibility that piracy sites are moving around various domains.

Notes: 1) "not accessible": Sites that were closed at the time of survey or were inaccessible due to errors such as security or region errors.

2) "redirect": sites that redirect to a completely unrelated site, or that redirect to the same site but to another domain.

For example, visiting chia-anime.tv redirects to chia-anime.me.

Characteristics of piracy sites in the 2022 survey: Content type breakdown by site type



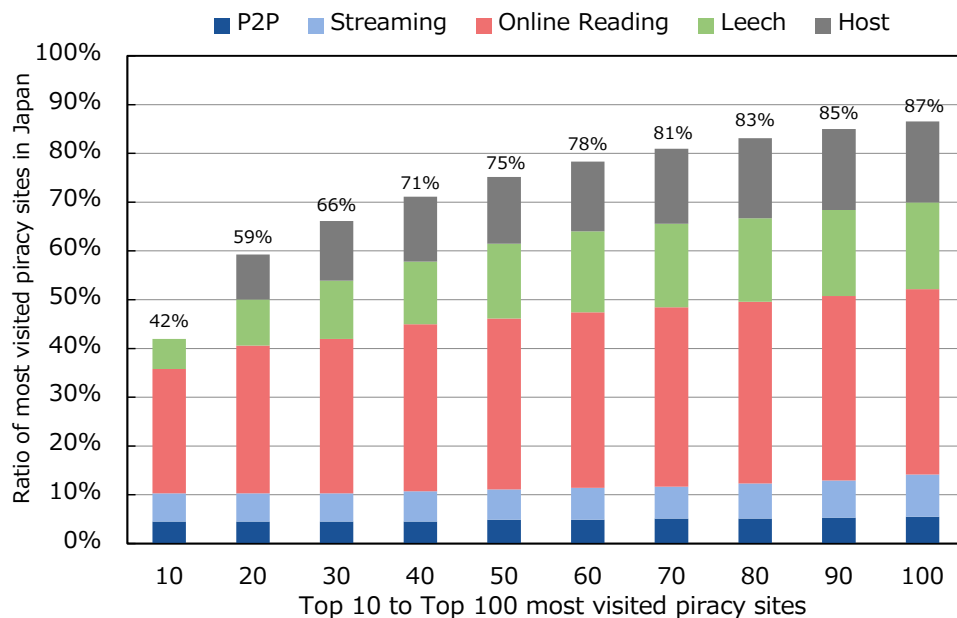
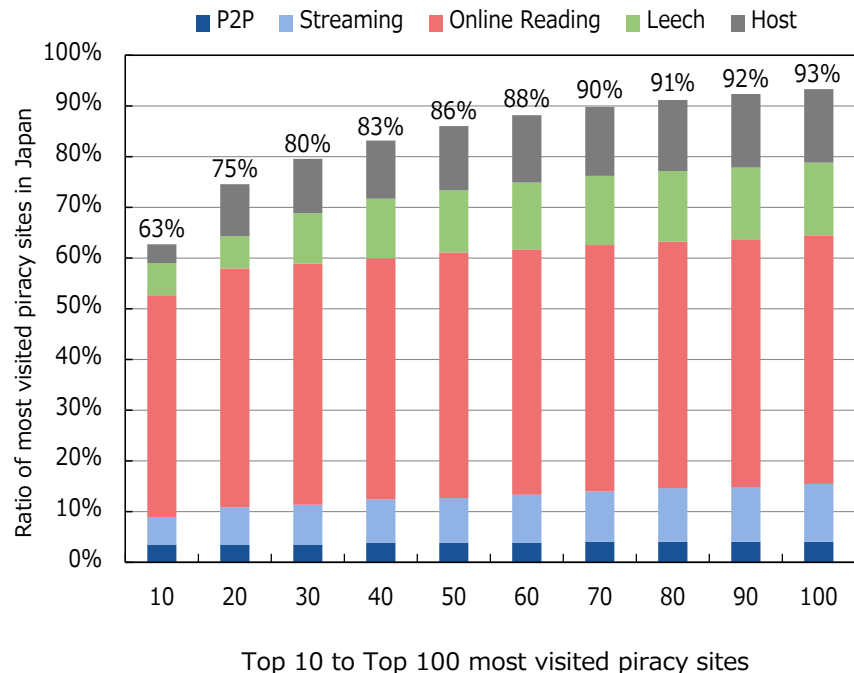
- P2P and streaming sites predominately comprise film, TV program, and anime contents.
- Online reading sites all comprise manga contents.
- Leech sites comprise film, TV program, anime, and manga contents.

Characteristics of piracy sites in the 2022

SURVEY: Ratio of visits to top piracy sites vs. total number of visits to piracy sites

June 2021

June 2022



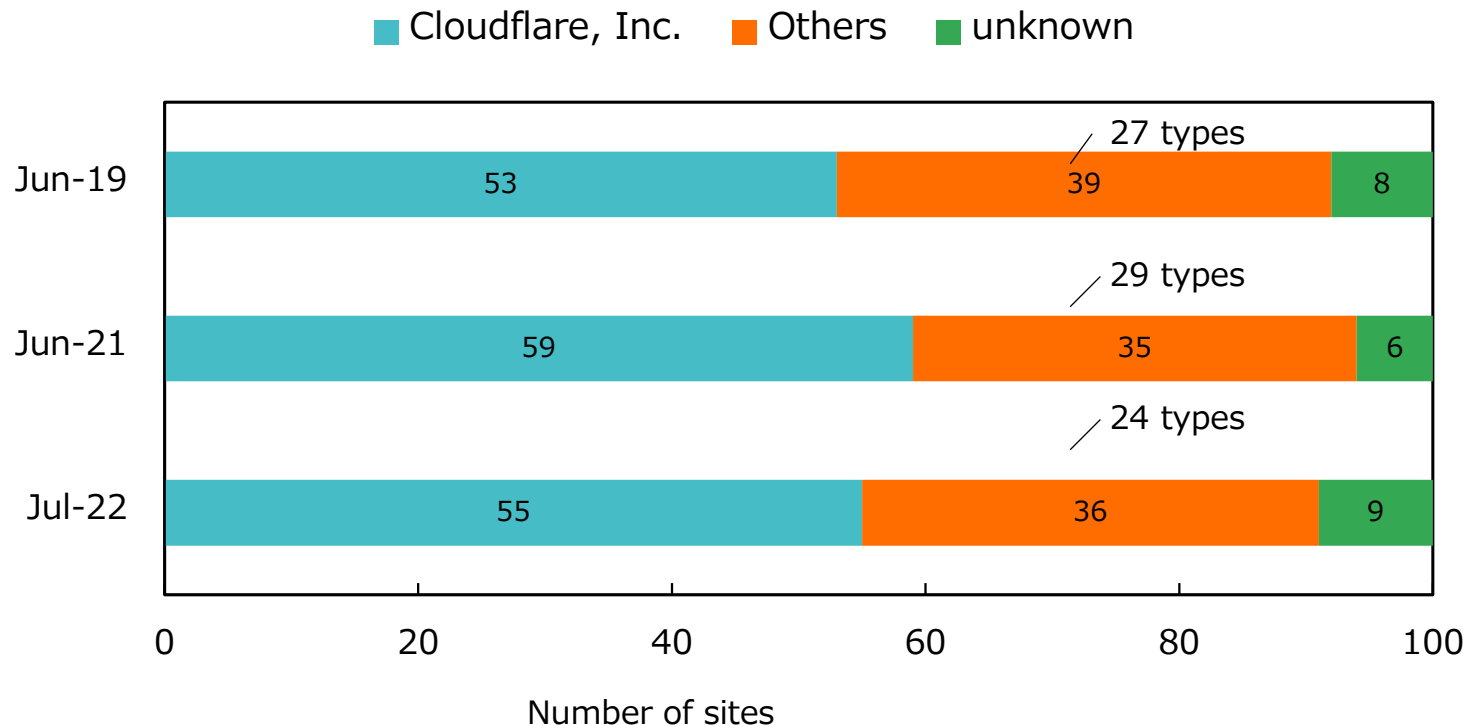
Compared to 2021:

- Percentage of visits to top 10 sites: 63% in 2021 ⇒ 42% in 2022
- Percentage of visits to top 100 sites: 93% in 2021 ⇒ 87% in 2022
 - ✓ The concentration of access to specific copyright infringement sites is diminishing, and we are now seeing widespread use of numerous piracy sites that pop up and then disappear.
- The ratio of visits to online reading sites is still high, but is clearly declining. Conversely, the ratio of visits to leech sites is increasing.

Characteristics of piracy sites in the 2022 survey:

Netblock Owners used by the top 100 piracy sites

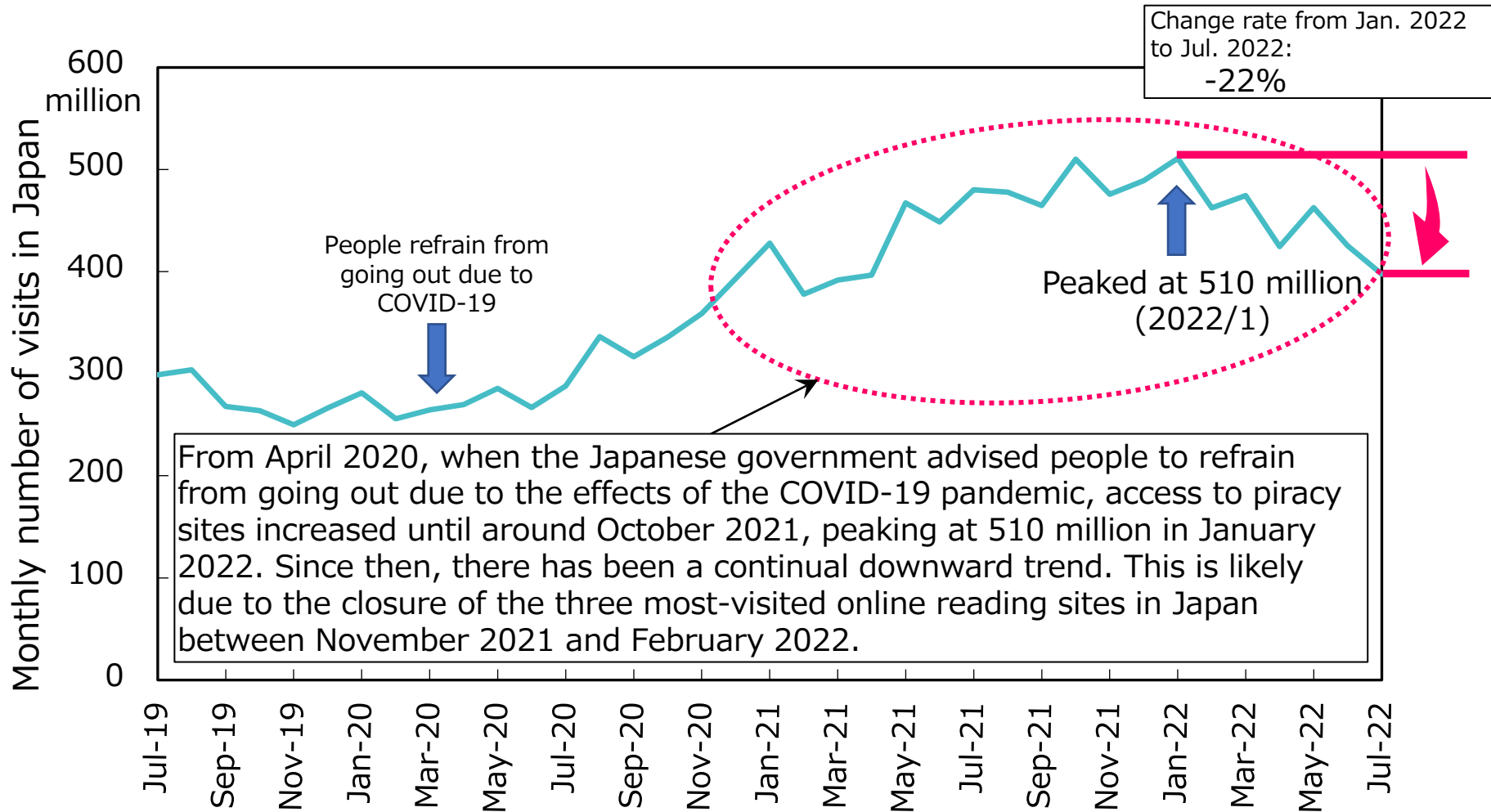
Using NetCraft, we collected IP addresses, hosting companies, countries of establishment, and Netblock Owners, and tallied the number of Netblock Owners (companies that manage IP addresses associated with domains). (Not the hosting companies of pirate sites)



From 2019 to 2022, over 50% of piracy sites were associated with the CDN operator Cloudflare.

Note:
In 2022, there were 24 different Netblock Owners other than Cloudflare, but the largest 4 sites had the same Netblock Owners and are therefore grouped under Others.

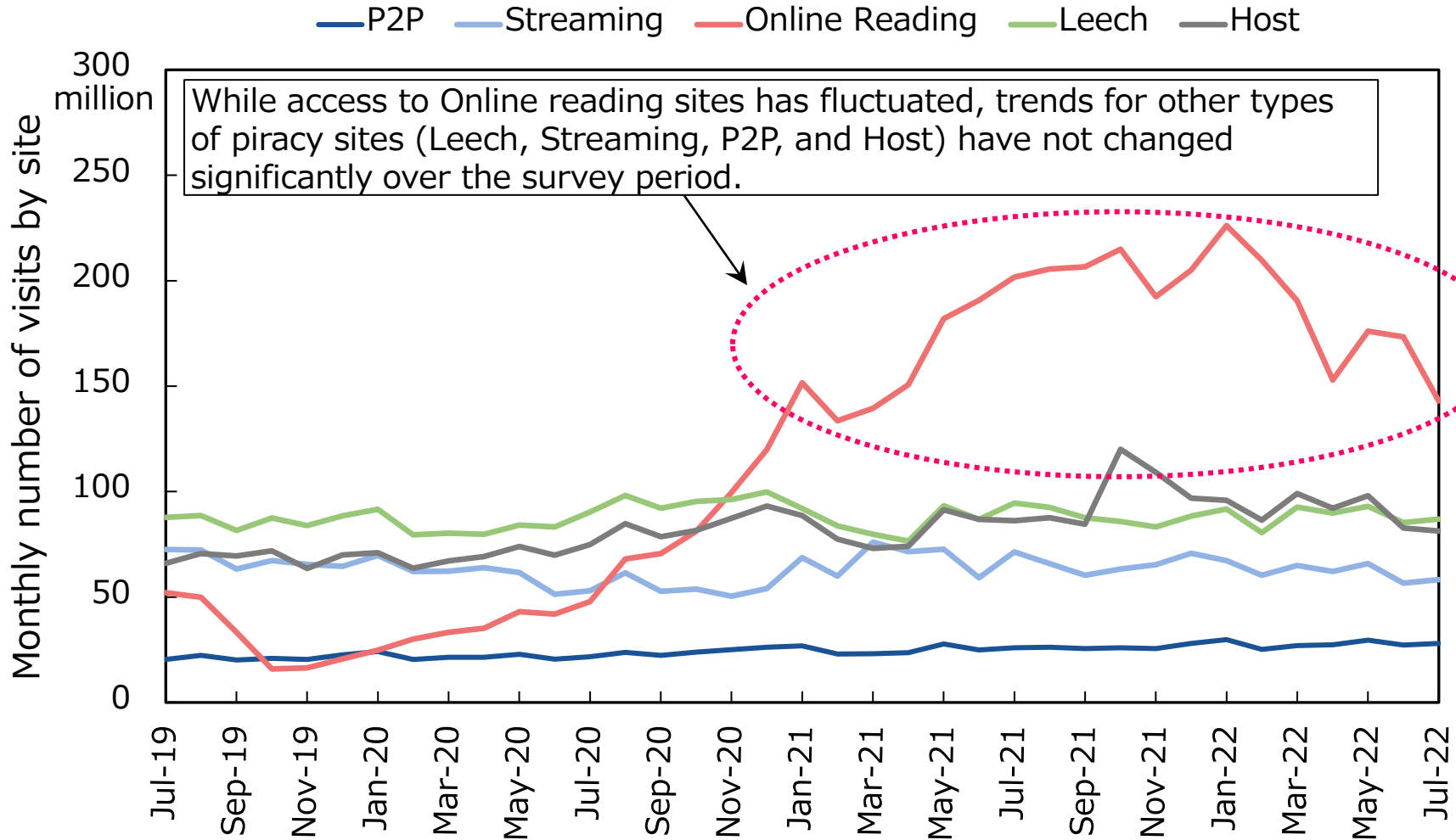
Trends in monthly total visits to piracy sites (1090 sites) (July 2019 to July 2022)



Note:

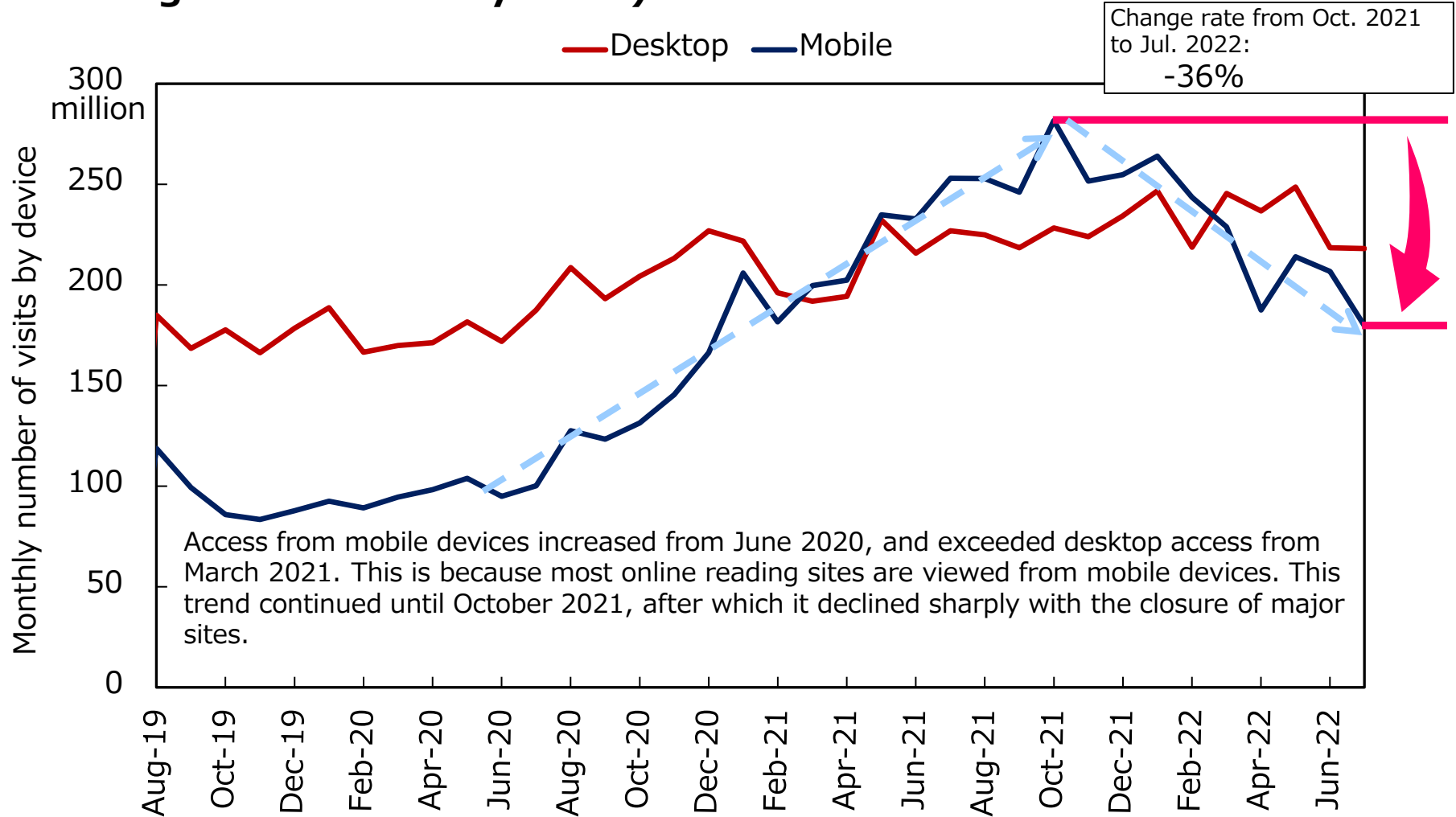
- 1) Piracy site categories include Host, Streaming, P2P, Leech, and Online reading sites.
- 2) The survey is based on SimilarWeb data acquired in September 2022.
- 3) Calculation method for "change rate":
 Jan.22 = Monthly total visits to piracy sites in January 2022, Jul.22 = Monthly total in July 2022
 "Change rate" calculated as $(Jul.22 - Jan.22)/Jan.22$.

Monthly number of visits to piracy sites (by site type) (July 2019 to July 2022)



Note: The survey is based on SimilarWeb data acquired in September 2022.

Monthly number of visits to piracy sites (by device) (from August 2019 to July 2022)

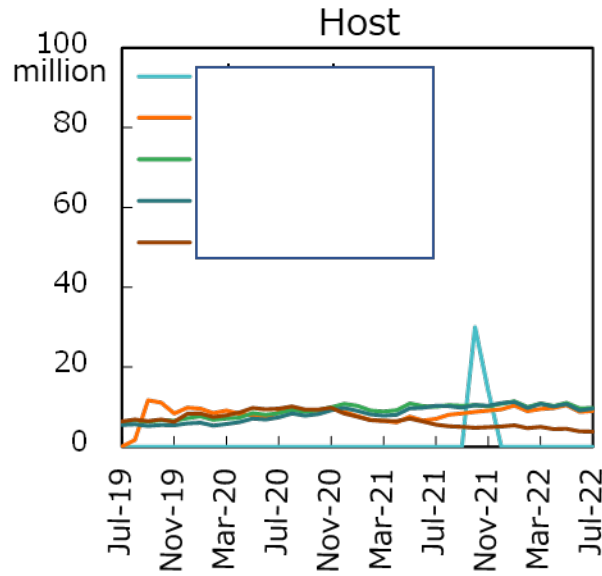
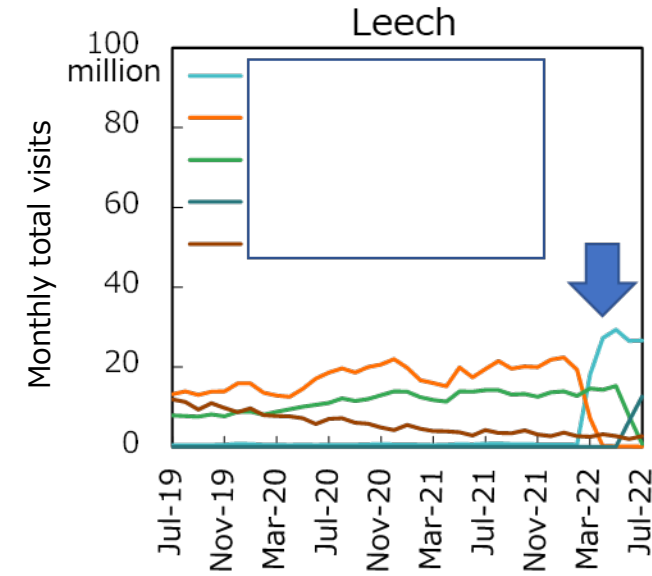
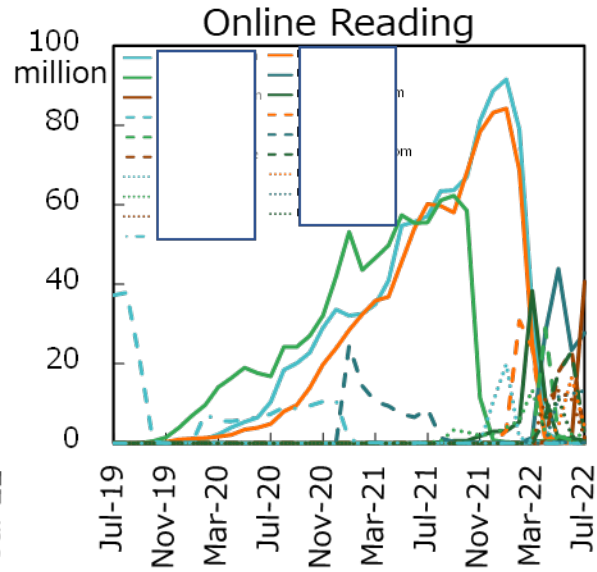
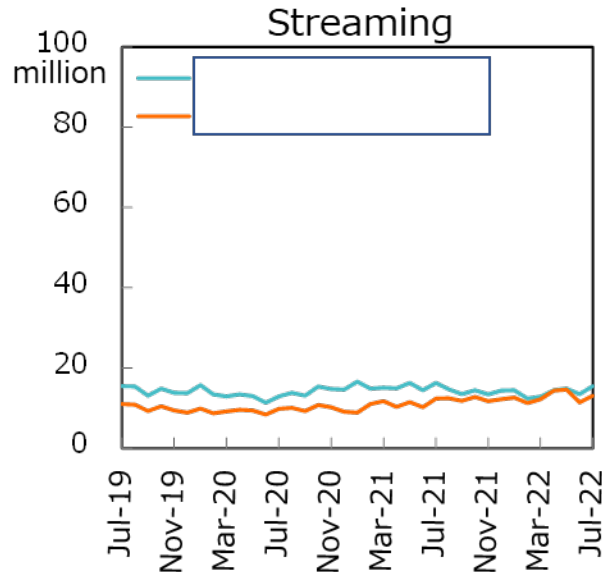
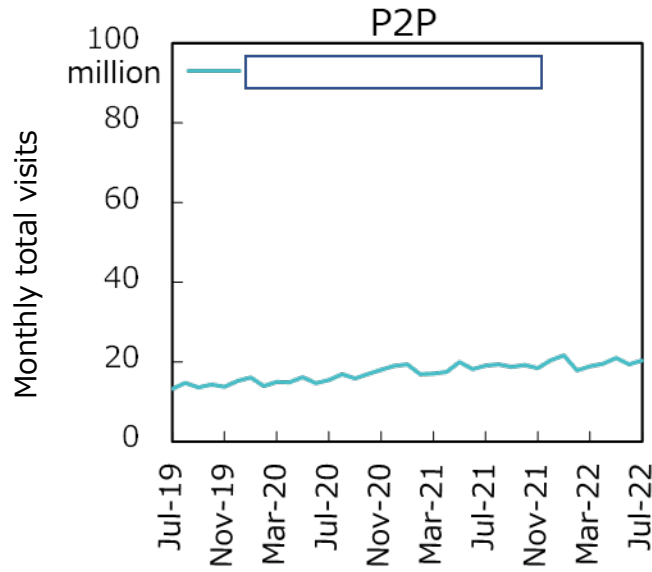


Notes:

- 1) The survey is based on SimilarWeb data acquired in September 2022. Thus, as the data for July 2019 were no longer available, the data shown are for August 2019 to July 2022.
- 2) Calculation method for "change rate":

$$\text{Change rate} = \frac{\text{Jul.22} - \text{Oct.21}}{\text{Oct.21}}$$

Trends in the number of visits by sites with over 10 million visits



- From among piracy sites with over 10 million visits, data were extracted according to each type and trends were visualized.
- The number of visits to online reading sites had been on the rise since early 2020, but declined sharply from Oct. 2021 to Feb. 2022. This is because the top three most visited piracy sites were shut down. However, since their closure, new piracy sites have been rapidly popping up and then disappearing.
- In regard to Manga leech sites (light blue), it appears that the number of visits is increasing due to the closure of online reading sites.

Note: The survey is based on SimilarWeb data acquired in September 2022.

Considering piracy sites in relation to the numbers of visits to legitimate sites

As one aspect of considering the numbers of visits to piracy sites, we compared them with the numbers of visits to legitimate sites. We investigated the numbers of visits to the top 20 legitimate sites in Japan. Visits to these sites account for roughly 80% of traffic to the legitimate sites that could be listed (71 sites). The survey was conducted by picking up 10 Manga sites and 10 Video (anime, film, TV) sites.

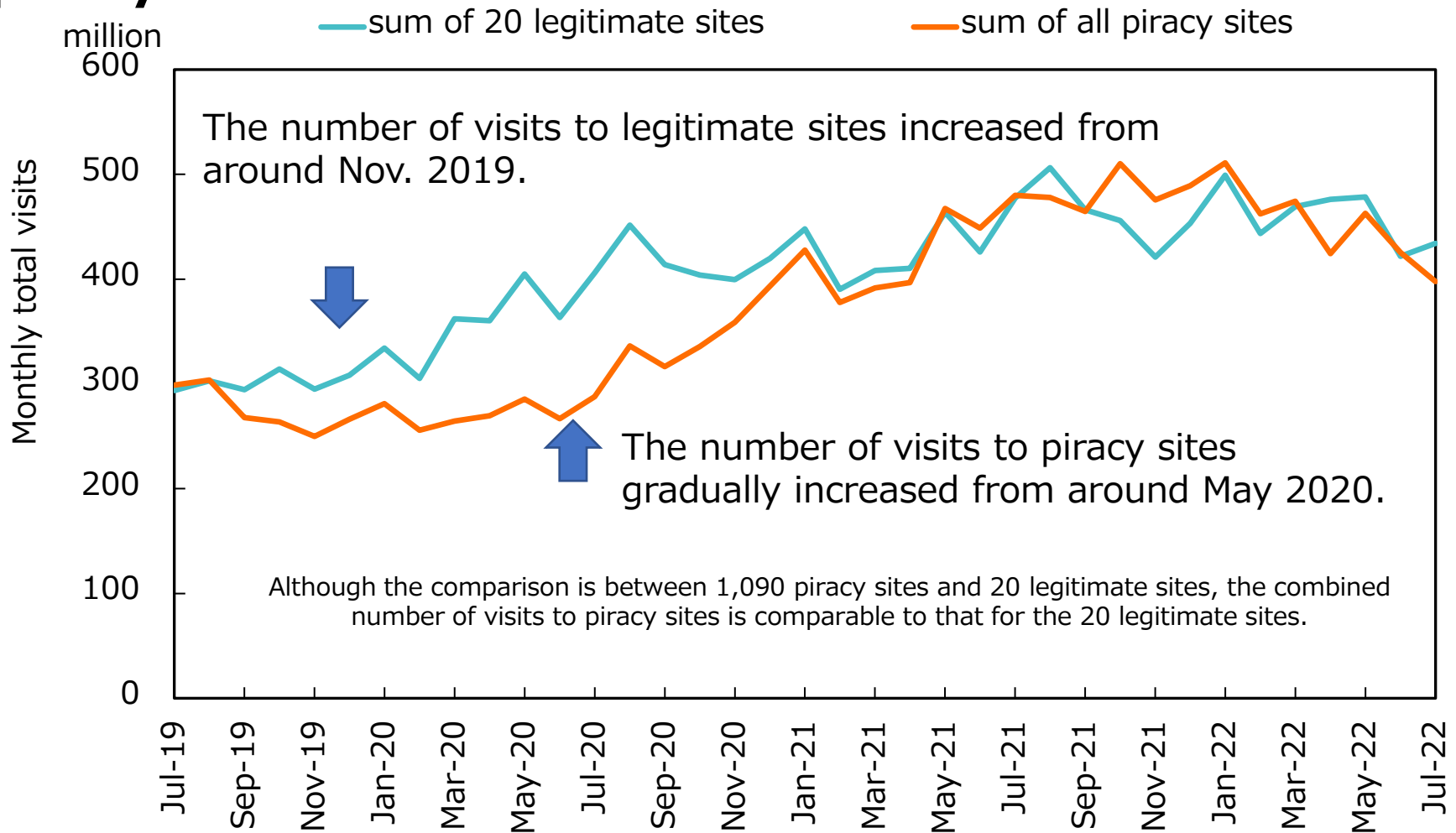
List of 10 legitimate Manga and Video sites

Type	Site name	URL	Max visits per month (millions)
Manga	コミックシーモア	cmoa.jp	116.3
	めちゃコミック	mecha.cc	74.4
	ピッコマ	piccoma.com	39.8
	無料まんが - eBookJapan	ebookjapan.yahoo.co.jp	35.6
	めちゃコミック	mechacomic.jp	26.5
	少年ジャンプ+	shonenjumpplus.com	25.8
	まんが王国	k-manga.jp	24.8
	Renta!	renta.papy.co.jp	22.1
	となりのヤングジャンプ	tonarinoyj.jp	21.6
	ブックライブ	booklive.jp	20.9
Video	abema.tv	abema.tv	45.8
	TVer	tver.jp	45.0
	NETFLIX	netflix.com	36.5
	GYAO!	gyao.yahoo.co.jp	31.6
	U-NEXT	unext.jp	29.0
	dアニメストア	anime.dmkt-sp.jp	17.7
	Hulu	hulu.jp	14.8
	スカパー!	skyperfectv.co.jp	11.7
	NHKプラス	plus.nhk.jp	11.4
	hulu	happyon.jp	11.3

Notes: 1) The survey is based on SimilarWeb data extracted in September 2022.

2) Amazon was excluded because it was not possible to distinguish visits to the Video site from visits to the shopping site. 3) The numbers only represent visits via Web access. Visits via app access are not counted.

Trends in the number of visits to legitimate and piracy sites

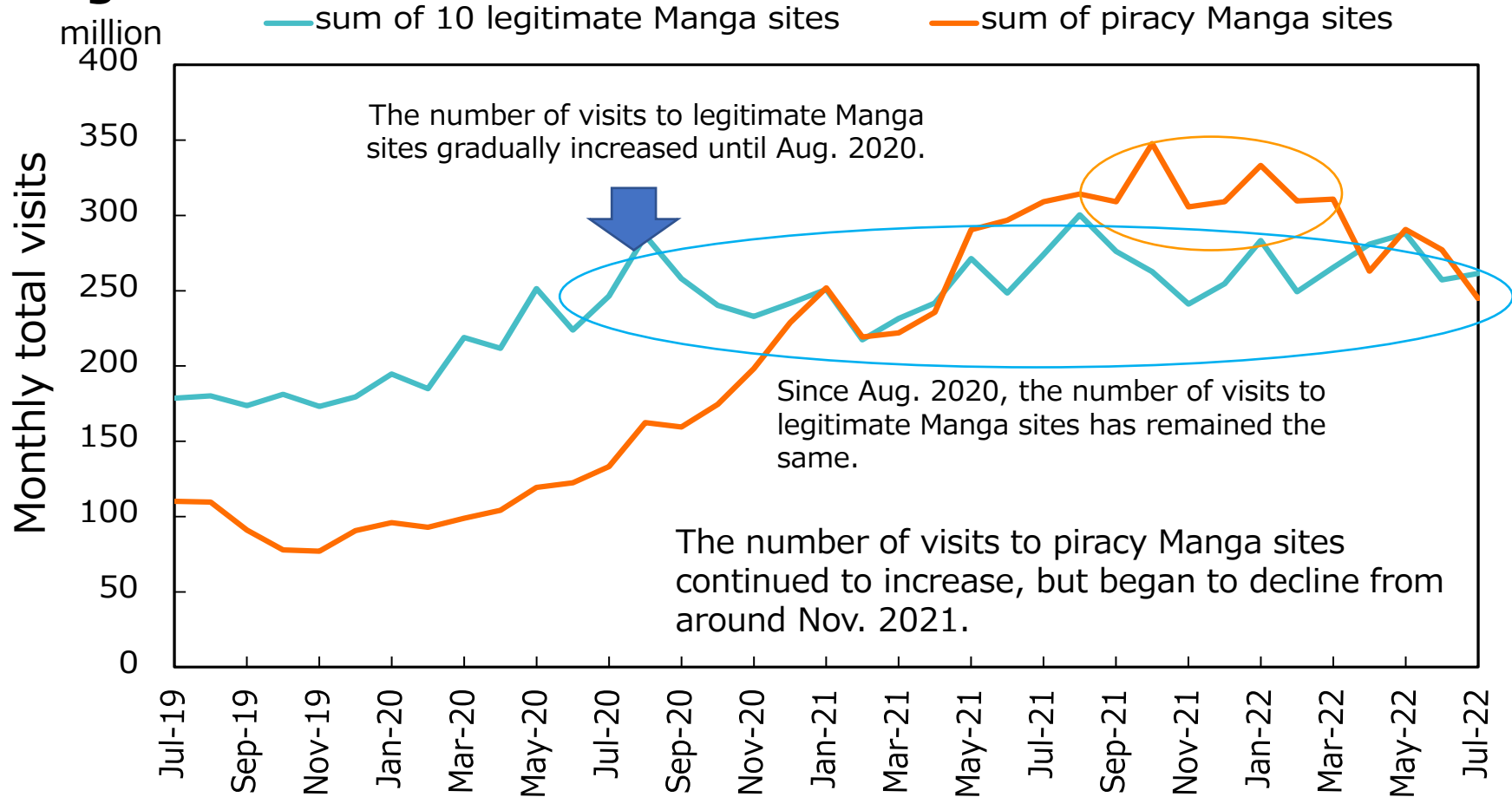


When Video and Manga sites are analyzed separately, interesting analysis outcomes can be observed, as shown on the following pages.

Notes:

- 1) "sum of 20 legitimate sites" is the total number of visits to 20 major legitimate sites.
- 2) "sum of piracy sites" is the total number of visits to 1,090 piracy sites.

Trends in the number of visits to legitimate and piracy Manga sites

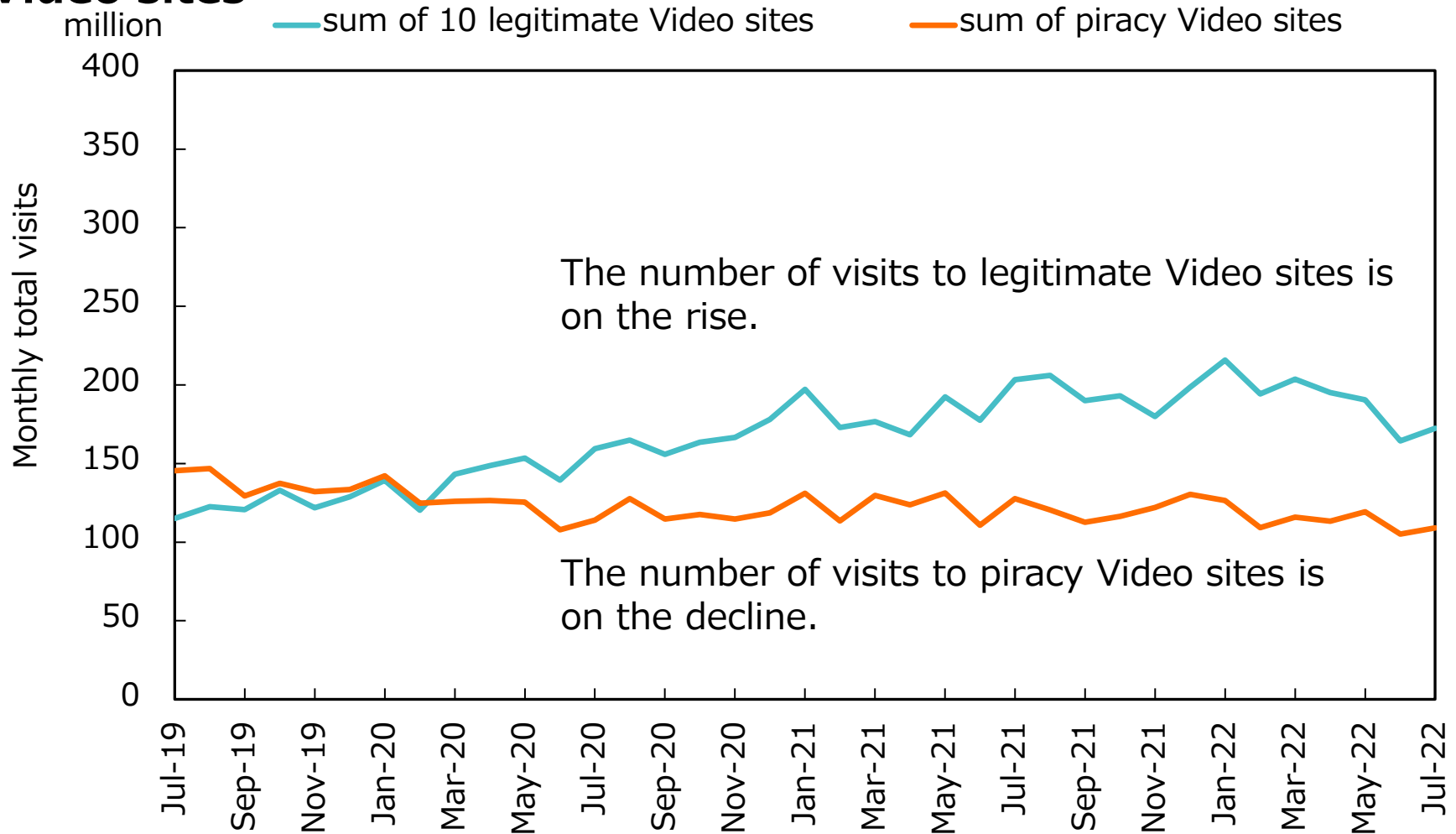


- **Although the number of visits to legitimate sites has increased, the number of visits to piracy sites has not decreased.**
- As access to piracy sites increases, access to legitimate sites is declining. However, it is possible that viewers of the legitimate sites are flowing to the official apps.
- In the case of Manga sites, one of the reasons for the increase in access to piracy sites is the fact that Manga can be viewed in good quality even on piracy sites, making it difficult for legitimate sites to establish any difference in quality.

Notes: 1) "sum of 10 legitimate Manga sites" is the monthly total of visits to 10 major legitimate Manga sites.

2) "sum of piracy Manga sites" is the total number of monthly visits to Manga content sites among 1,090 copyright infringement sites. 3) Manga sites: 245 sites in total

Trends in the number of visits to legitimate and piracy Video sites



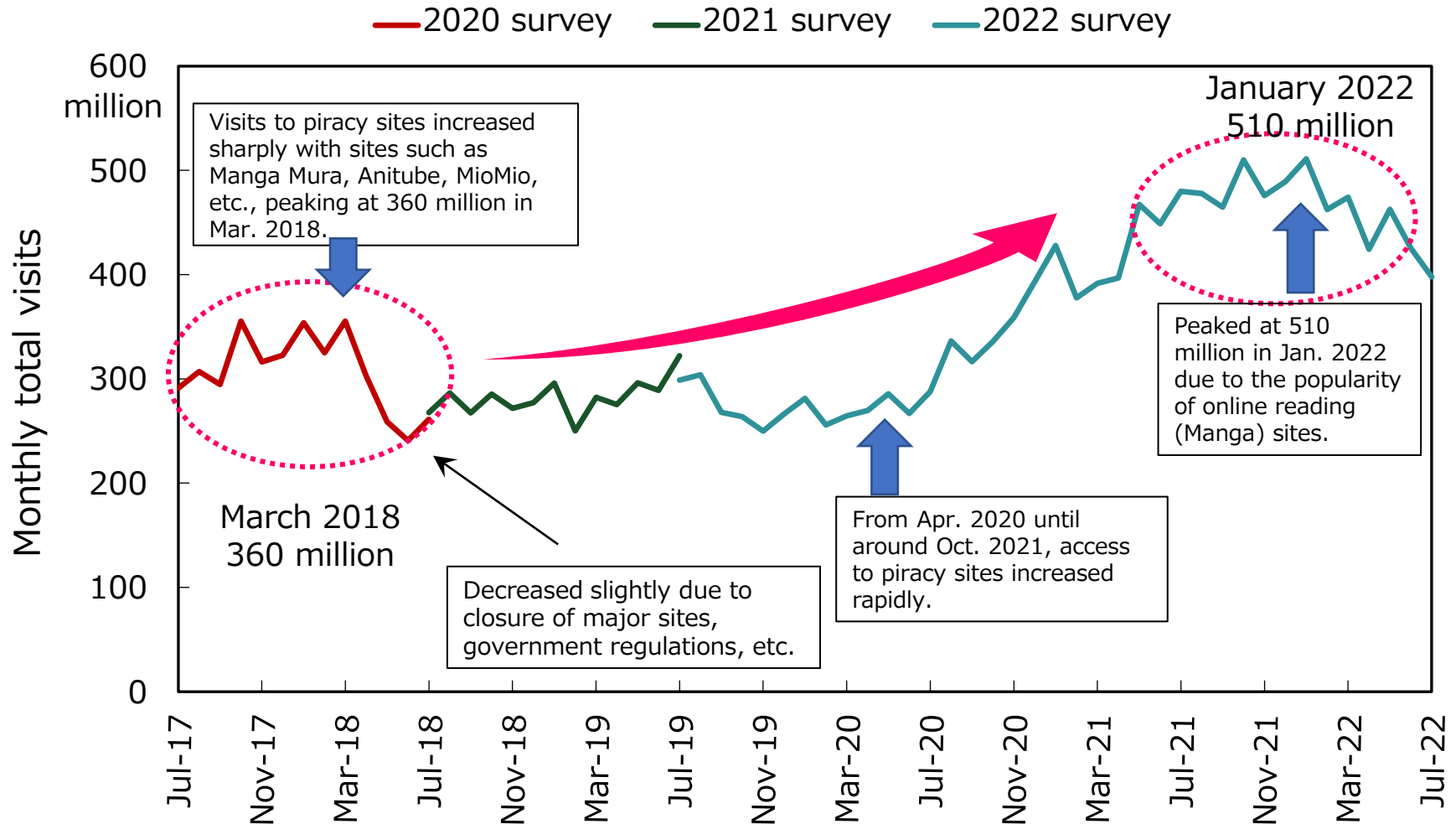
- A favorable correlation can be seen.
- In the case of Video content, qualitative differences tend to arise between legitimate sites and piracy sites, and an increase in visits to legitimate sites may lead to a decrease in visits to pirate sites.

Notes: 1) "sum of 10 legitimate Video sites" is the total number of visits to 10 major legitimate Video sites.

2) "sum of piracy Video sites" is the monthly total number of visits to piracy sites including Anime, Films, and TV Programs (excluding Manga) out of 1,090 piracy sites. 3) Video sites: Anime, Films, and TV Programs; 568 sites in total

Trends in total visits to piracy sites over 5 years (from July 2017 to July 2022)

The results of the 2020, 2021, and 2022 surveys were integrated to visualize trends over 5 years. The number of visits to piracy sites is increasing.



Notes: 1) 2020 survey: Covering a total of 731 copyright infringing sites, the survey is based on SimilarWeb data extracted in June 2020.
 2) 2021 Survey: Covering a total of 867 copyright infringement sites, the survey is based on SimilarWeb data extracted in August 2021.
 3) 2022 survey: Covering a total of 1,090 copyright infringement sites, the survey is based on SimilarWeb data extracted in September 2022.
 *Discontinuity in 2021 and 2022 surveys: Specifications changed in August 2022; discontinuity between 2020 and 2021 surveys due to the addition of sites in the 2021 survey

Characteristics of piracy sites in the 2022 survey

- According to the 2022 survey, there were 1,090 piracy sites for which the monthly number of visits from Japan exceeded 100,000 at least once, an increase of 223 from the previous year.
- A survey of the top 100 most accessed piracy sites showed that the concentration of access to specific piracy sites decreased, suggesting that there is more spread-out use of numerous piracy sites that pop up and then disappear.
- A survey of the IP address management companies (Netblock Owners) of the top 100 most accessed piracy sites found that more than 50% used a CDN operator (Cloudflare).

Trends in the monthly number of visits to piracy sites

- The number of visits to piracy sites peaked at 510 million in January 2022 due to the popularity of online reading (Manga) sites. This was about 1.4 times the peak of 360 million views in March 2018, when "Manga Mura" peaked. The total number of visits to piracy sites in July 2022 was about 400 million.
- Looking back on the monthly number of visits to piracy sites over the past 5 years, we can see the following:
 - Average from July 2017 to June 2018: 310 million (March 2018: Manga Mura's peak)
 - Average from July 2018 to June 2019: 279 million
 - Average from July 2019 to June 2020: 273 million (August 2019: Hoshinoromi)
 - Average from July 2020 to June 2021: 378 million (April 2020: State of emergency declared)
 - Average from July 2021 to July 2022: 466 million (January 2022: Multiple online reading sites peak)The number of visits to piracy sites continued to increase.
- The number of visits to piracy Video sites is on the decline, while the number visits to piracy Manga sites is on the rise, albeit with fluctuations.

Piracy sites have become more sophisticated (complicated) and the total number of visits has increased.

Thank you.

This presentation represents part of the results of a survey commissioned by Motion Picture Association, Inc. (MPA), conducted by Photonic System Solutions Inc., and supervised by Eriko Watanabe (The University of Electro-Communications).

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